



U.S. DEPARTMENT OF ENERGY

Richland Operations Office Briefing to **The Nuclear Cleanup Caucus**

March 16, 2011

Matt McCormick

Manager, Richland Operations Office

Neil Brosee

President, Washington Closure Hanford

John Lehew

President and CEO, CH2M Hill

Frank Armijo

President and General Manager, MSA

www.hanford.gov



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Hanford

Site Owner

- U.S. Department of Energy

Size

- 586 square miles

Nearby Cities

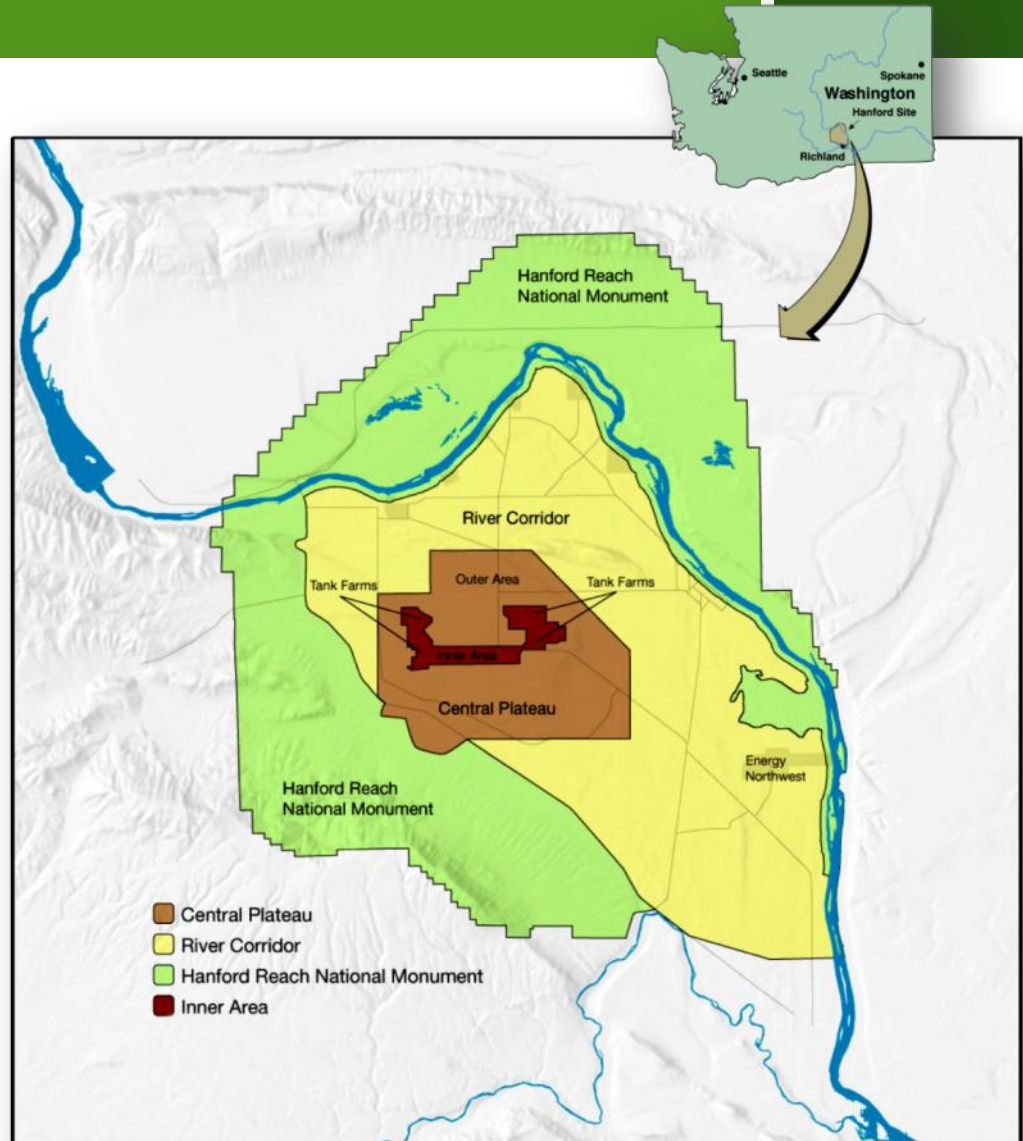
- Richland, Pasco, Kennewick
- Total population ~250,000

Workforce

- ~12,000

Funding

- Approx. \$2.367 billion for 2012



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Cleanup Funding

Funding (Richland Operations Office)

- FY 2012 request is \$1.006 billion
- Received \$1.635 billion in Recovery Act funding
- \$969 million in Recovery Act funding spent through the end of January

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Jobs

- Approximately 12,000 Hanford Site employees
- Recovery Act jobs: 2,829 jobs created, 285 saved
- Workforce reduction of approx. 1,650 by October as Recovery Act projects are completed



Cleanup Funding

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Subcontracting

- \$1.3 billion in subcontracting in FY2010
- \$477M in Recovery Act prime and subcontracts awarded to small business
- \$324M out of \$1 billion in Base prime and subcontracts awarded to small business in FY2010

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A Vision & Strategy for Cleanup

Strategy for cleanup

- Cleanup Completion Framework
- 2015 Vision
- Central Plateau Strategy



This strategy for Hanford Site cleanup supports goals in the Office of Environmental Management's Journey to Excellence



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Key Components of 2015 Vision

Building on the Recovery Act momentum, the Richland team will

- ✓ Shrink the active cleanup footprint by 90 percent

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Hanford footprint reduced from 586 square miles to less than 75 square miles.



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Key Components of 2015 Vision

Building on the Recovery Act momentum, the Richland team will

- ✓ Shrink the active cleanup footprint by 90 percent

- ✓ Protect the Columbia River

✓ Protect the Columbia River

Remove contaminated soil and solid waste adjacent to the river and install critical groundwater remedies to stop key contaminants from entering the river, including chromium, by 2012.



Key Components of 2015 Vision

Building on the Recovery Act momentum, the Richland team will

- ✓ Shrink the active cleanup footprint by 90 percent

- ✓ ✓ Complete cleanout and demolish the Plutonium Finishing Plant Complex

Deactivate and demolish over 80 facilities/structures. Eliminates the highest risk nuclear facility on the Hanford Site by the end of 2013.



Key Components of 2015 Vision

Building on the Recovery Act momentum, the Richland team will

- ✓ Shrink the active cleanup footprint by 90 percent

- ✓ ✓ **Contain key contaminants on the Central Plateau**

- ✓ Install critical groundwater pump and treat systems by 2012, and operate them to contain key contaminants in the center portion of Hanford so they do not reach the Columbia River in the future.



Key Components of 2015 Vision

Building on the Recovery Act momentum, the Richland team will

- ✓ Shrink the active cleanup footprint by 90 percent
- ✓ **Disposition 90 percent of legacy transuranic (TRU) waste by 2015**
 - Continue transuranic waste retrieval from underground storage, treating for disposal and shipping TRU waste to the Waste Isolation Pilot Plant.



Key Components of 2015 Vision

Building on the Recovery Act momentum, the Richland team will

- ✓ Shrink the active cleanup footprint by 90 percent
- ✓ **✓ Reduce infrastructure costs by 10 percent**
As a result of shrinking the active cleanup footprint, costs associated with infrastructure and site services are reduced by at least 10 percent starting in Fiscal Year 2015.
- ✓ Reduce infrastructure costs by 10 percent



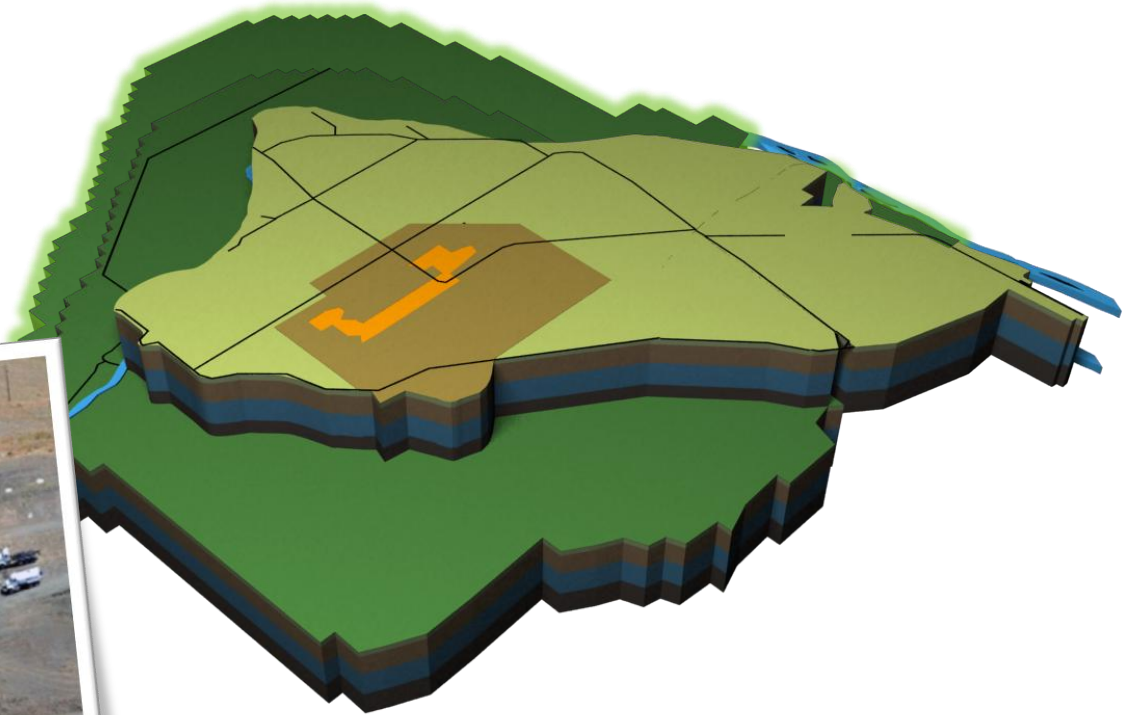
Shrink the Footprint

The Hanford Reach National Monument
(~290 sq. mi.)

The River Corridor
(~220 sq. mi.)

Central Plateau Outer Area
(~65 sq. mi.)

Central Plateau Inner Area
(~10 sq. mi. or less)



By Sept 2011



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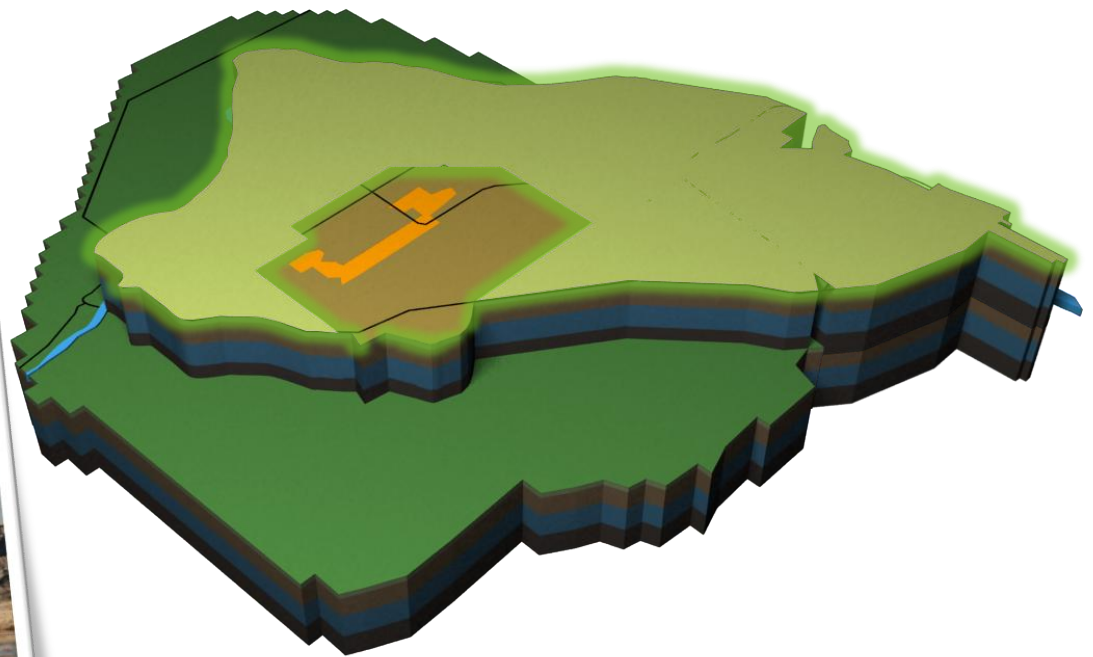
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By Sept 2015



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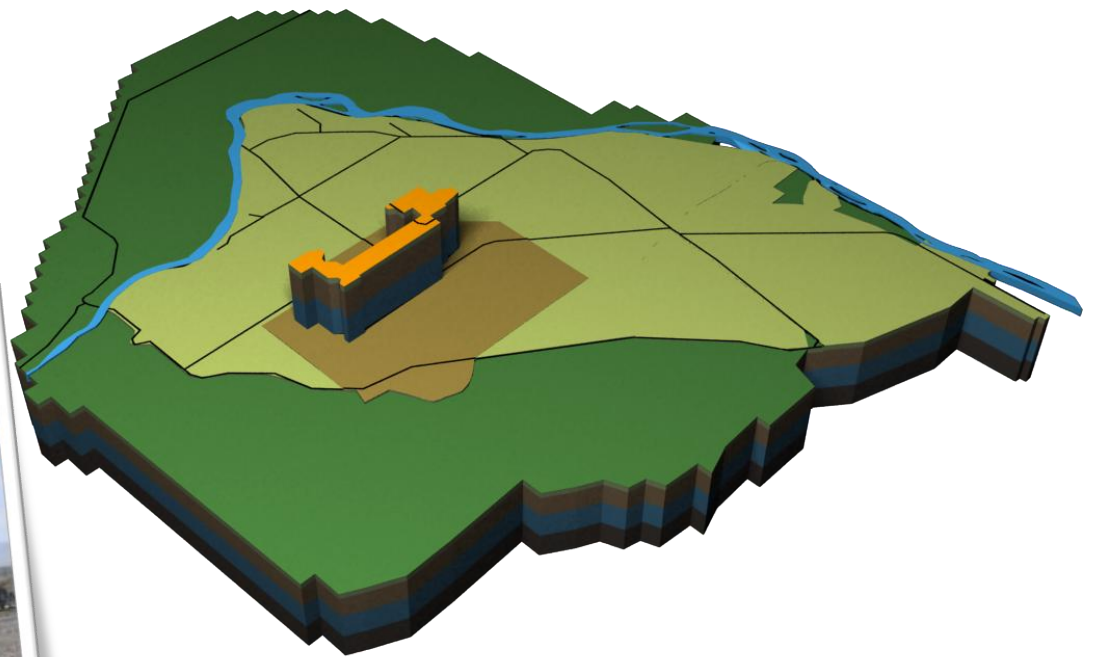
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Shrink the Footprint

5 canyons

177 underground
tanks

> 1,400 waste sites
and pipelines

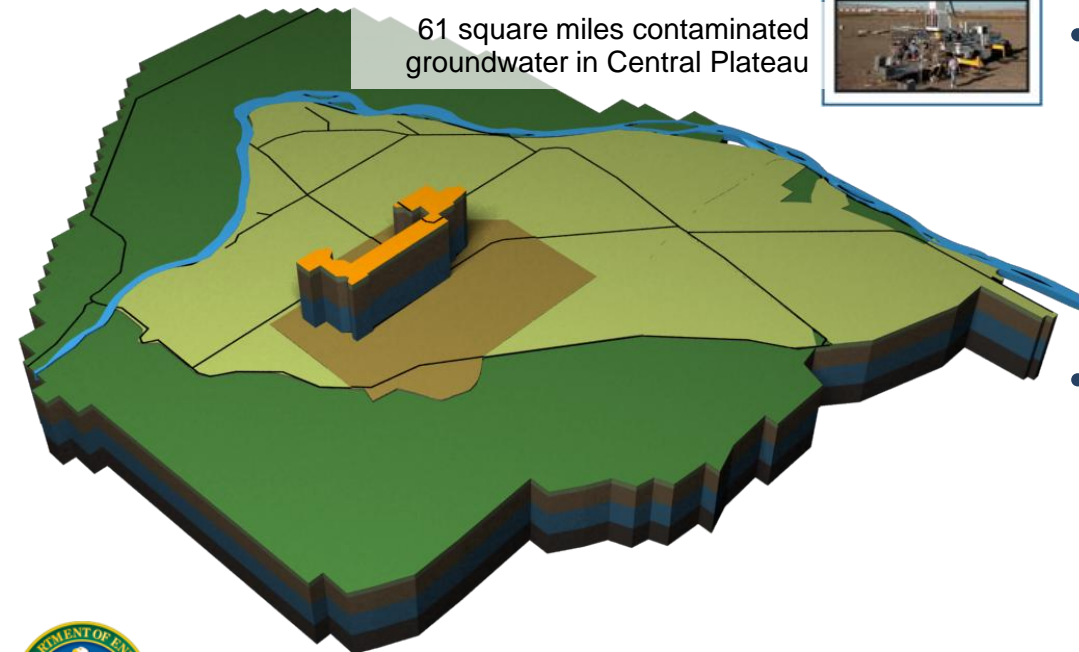
>900 structures

61 square miles contaminated
groundwater in Central Plateau



Central Plateau Strategy

- Outer Area ($> 65 \text{ mi}^2$)
 - Remediate to unrestricted surface use (standards comparable to River Corridor)
- Inner Area ($\sim 10 \text{ mi}^2$)
 - Final footprint (make as small as possible)
 - Less than 2 percent of the original Hanford Site
- Groundwater
 - Contain and remediate key groundwater contaminants
 - Restore groundwater to maximum beneficial use



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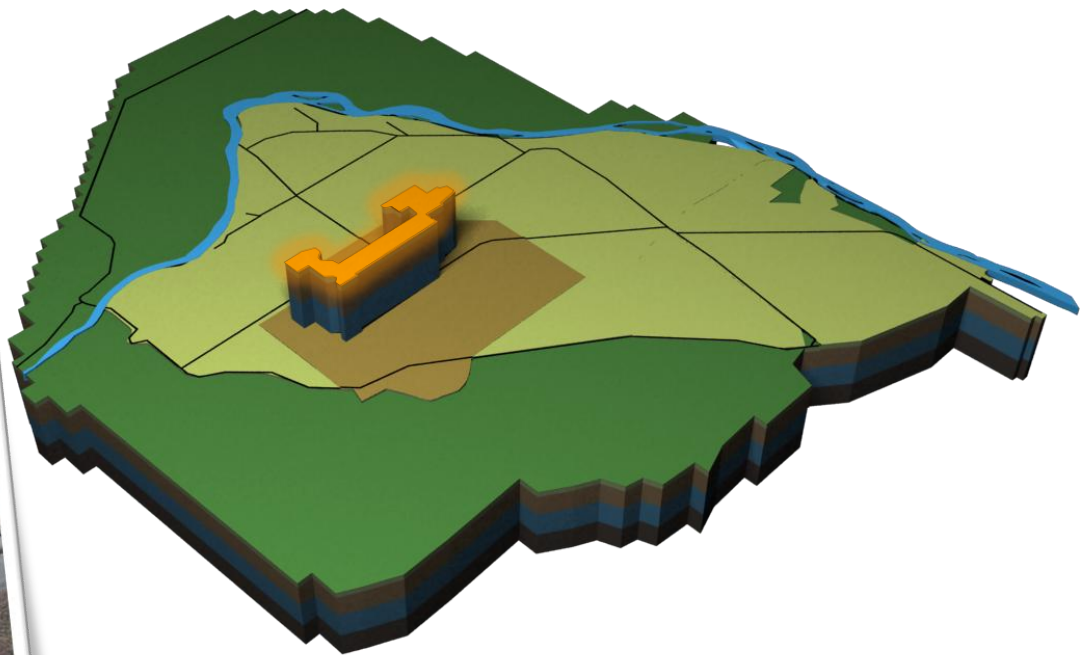
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By Sept 2020



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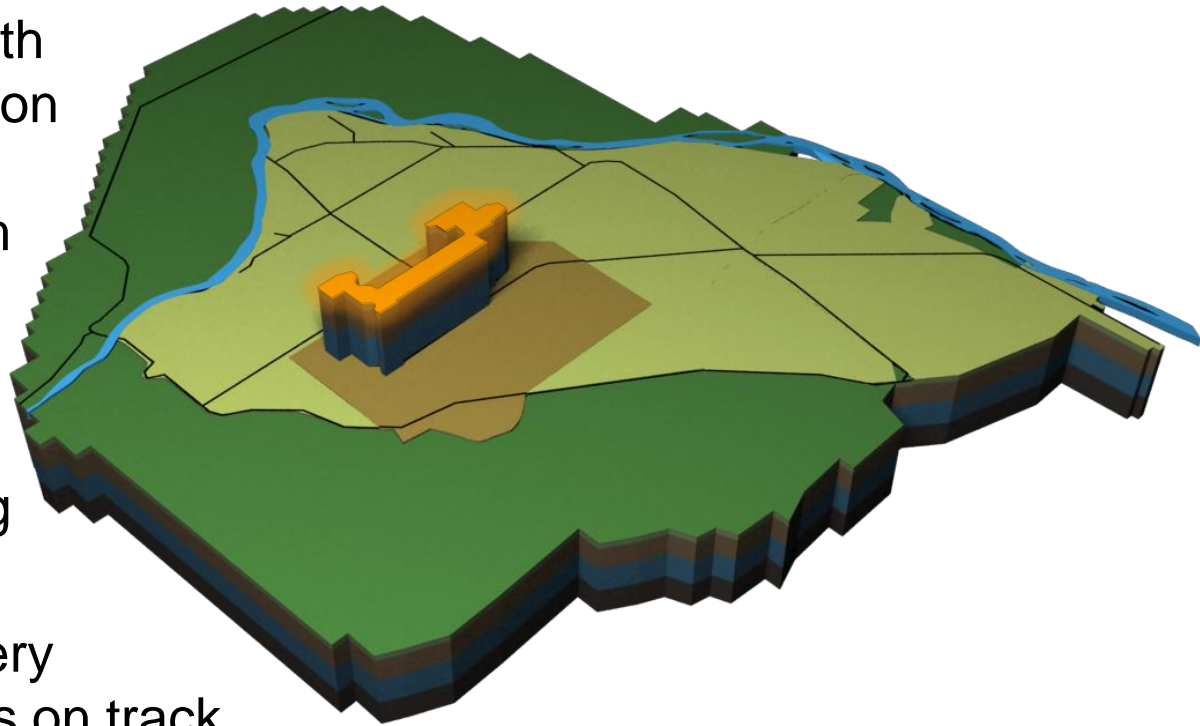
Progress in 2012

- With the proposed 2012 budget for the Richland Operations Office (\$1.006B), we will make substantial progress in meeting our 2015 vision
 - ✓ Funds the River Corridor cleanup
 - ✓ Keeps DOE on track to achieve 90 percent reduction of active cleanup footprint by 2015
 - ✓ Allows us to continue making progress toward containing and preventing contaminants from entering the Columbia River



DOE-RL is a Sound Investment

- Vision and a strategy for Hanford Cleanup
- Overall alignment with regulatory agencies on vision, strategy; general support from Tribal Nations, stakeholders
- All compliance milestones are being met
- All base and Recovery Act activities/projects on track and projected to complete under cost and within schedule
- Work is being done safely





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Hanford Cleanup Progress CH2M HILL Plateau Remediation Company

March 17, 2011

Presented by
John Lehew
President and Chief Executive Officer



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Work Scope

\$5.26 Billion,
10-year contract

- 100K Area remediation (two reactor complexes, 35m³ of highly radioactive material, 89 facilities to demolish, 109 waste sites)
- Plutonium Finishing Plant (PFP) closure (46 facilities to demolish, 232 glove boxes, special nuclear material and fuel)
- Groundwater/vadose zone remediation project (12 plumes with 10 major contaminants encompassing approximately 80 square miles)
- Facility, waste site, and canyon remediation (>800 facilities, more than 1,400 waste sites)
- Treatment and disposal of more than 15,000 legacy containers of radioactive waste, retrieval of 5,400m³ of transuranic (TRU) waste, treatment of more than 130 million gallons of liquid waste annually, management of 2,300 metric tons of spent fuel and interim storage of 1,936 cesium and strontium capsules
- Place Fast Flux Test Facility into minimum surveillance and maintenance condition
- Responsible for coordination all decision documents for Site, including the River Corridor
- Responsible for decommissioning and remediation of the Hanford Reach National Monument (290 sq miles)



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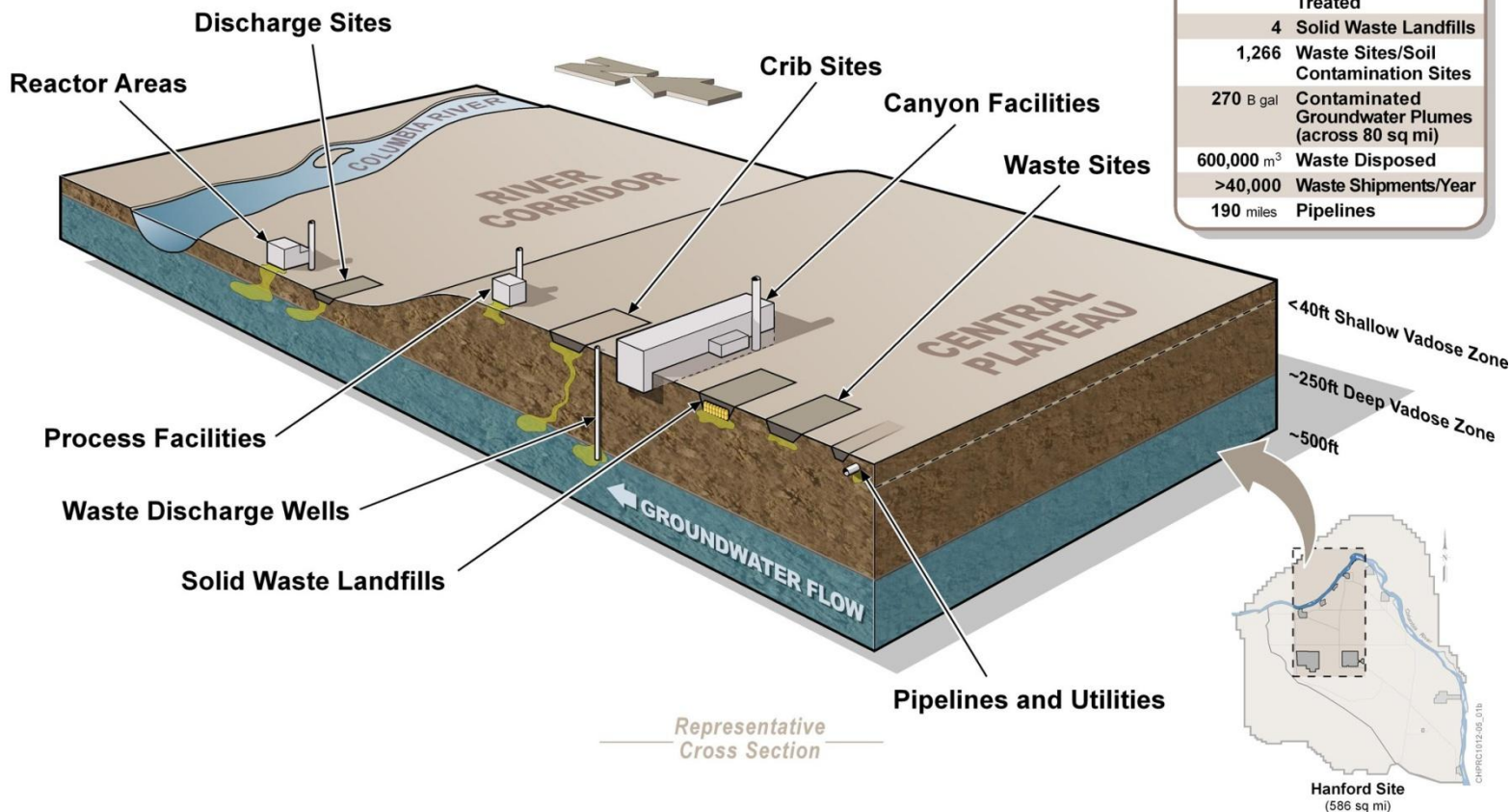
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Work Scope

CH2M HILL Plateau Remediation Company

Pre-Cleanup Legacy Environmental Conditions



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Safety Programs

Protecting our Workers



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Accomplishments

Working Safe, On Schedule, Below Cost

Cost Performance Index = **1.02**

Schedule Performance Index = **0.98**

- All 70 regulatory milestones completed on or ahead of schedule
- Exceeding small business goals
- Meeting Recovery Act goals
 - \$686M Subcontracts awarded (55% to small businesses)
 - 2,633 Prime and Subcontractor jobs as on 12/2010
 - All Key Performance Parameters on or ahead of schedule
- Providing workers experience and training for future growth
 - 1,373 HAMTC workers
 - More than 550 Building Trades workers

Recovery Act Funds Accelerate Achieving 2015 Vision

- Reduced footprint by 153 square miles out of 290
- Drilled 369 groundwater wells
- Increased pumping capacity, treating more than 600 M gallons of groundwater
- New treatment resin at DX reduces long-term operating costs
- Downgrading PFP security
- Accelerating PFP demo three years ahead of TPA milestone
- Accelerated completion the 200 West Groundwater Treatment Facility – the largest Pump-and-Treat System constructed at Hanford – five years ahead of schedule
- Accelerated TRU waste retrieval ~ resumed WIPP Shipments in 2010, four years early (139 shipments)
- Early preparation of U-Canyon for demolition two years ahead of the milestone



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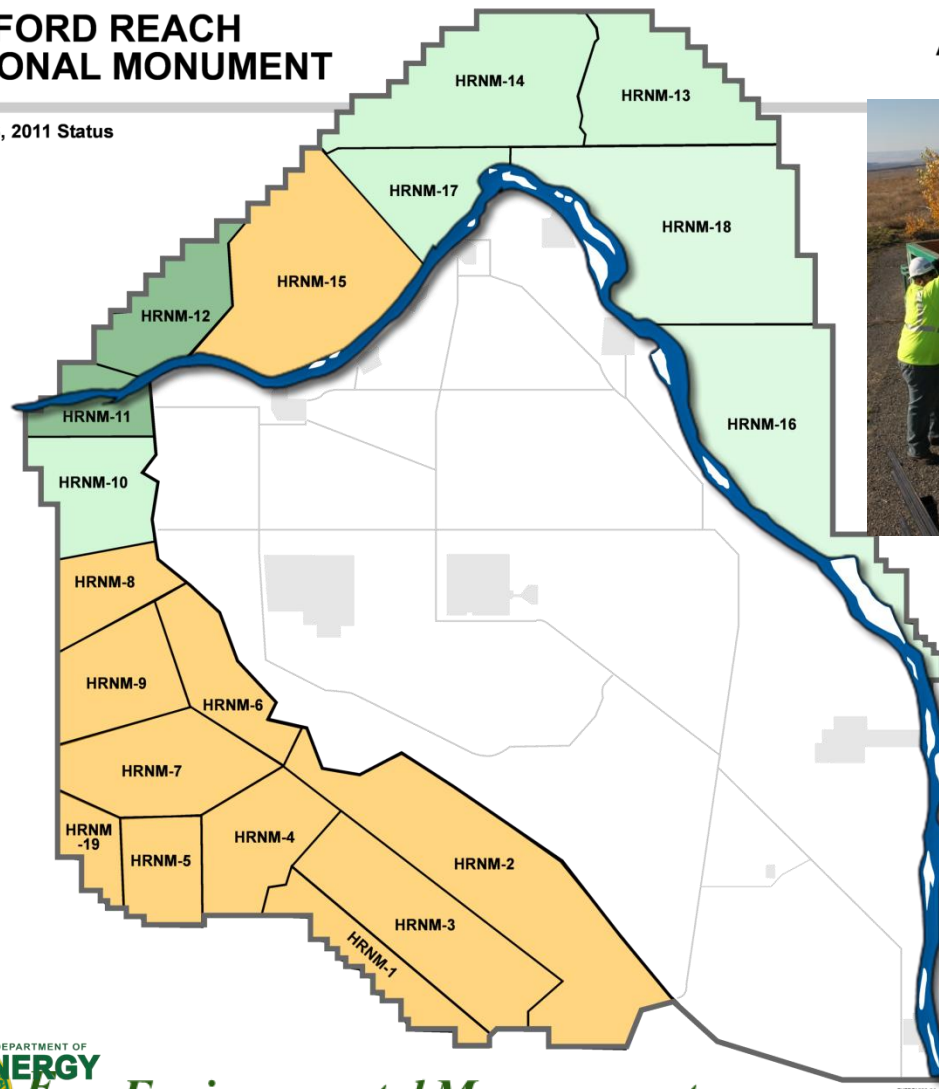
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Hanford Reach National Monument

Shrinking the EM Footprint: 290 square miles by 2011

HANFORD REACH NATIONAL MONUMENT

January 6, 2011 Status



ALE/NORTH SLOPE CLOSURE AREA



- 153 square miles complete
- Removed 24 structures and more than 500 debris sites
- Unique teaming approach with HAMTC, Sealaska and Yakama Tribe



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Progress to Date

River Corridor

Groundwater Protection

- 100-DX Pump-and-Treat System construction complete and operational; treatment capacity is 600 gpm
- Initiated construction of 100-HX Pump-and-Treatment System
- More than 48 waste sites remediated
- Removed and disposed of 290,000 tons of soil
- **One million hours of safe work within S&GRP**

Sludge Treatment Project

- KnockOut Pot Pretreatment Qualification Test completed
- KOP Pretreatment Operator Training completed

Remedial Investigation/Feasibility Study Work Plans

- Submitted five of six to the regulators

Decontamination and Decommissioning

- Demolished 35 Facilities
- Initiated K East Reactor characterization



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Progress to Date

Central Plateau

BC Control Area (Hanford's Largest Waste Site)

- Excavated 140 acres
- Surveyed 130 acres
- Removed and disposed of 337,000 tons soil
- Used innovative remediation tools – helicopter aerial surveys, super dump trucks, land-based GPS assisted mobile surveys

Other Waste Sites

- More than 25 waste sites remediated

Well Drilling

- 369 wells drilled
- 188 wells decommissioned

Decontamination and Decommissioning

- Three fuel storage buildings demolished under ARRA funding
- Twelve industrial structures under base funding
- Twenty structures (15 Industrial / 4 Radiological / 1 Nuclear) under ARRA funding



Soil remediation in the BC Control Area



Well Drilling on Central Plateau



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Progress to Date

Central Plateau



Preparation of Large Container Waste Shipment



200 West Pump-and-Treat Groundwater Treatment

Waste Treatment and Disposal

- Shipped 4,663 m³ of mixed/low-level waste to treatment facility
- Retrieved 1,379 m³ CH-TRU waste
- Repackaged 758 m³ CH-TRU waste
- Completed 139 TRUPACT II shipments to WIPP
- Shipped 853,500 tons to ERDF (more than 46,000 shipments)

Groundwater Protection

- Initiated construction of 200 West Groundwater Treatment Facility
 - Will establish 2,500 gpm treatment capacity
 - Leadership in Energy & Environmental Design (LEED) certifiable facility
 - Largest, most complex in EM



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Progress to Date

Central Plateau

Plutonium Finishing Plant

- **Over one year and one million hours of safe work!**
- Preparing for 2013 demolition—three years ahead of TPA milestone
- Historic security downgrade complete
- 133 gloveboxes removed
- 22 ancillary structures demolished
- Over 135 supplied air entries into 242-Z Americium Recovery Facility and Plutonium Reclamation Facility



PFP Containment of PVS Removal

U Canyon

- 120-plus large radioactive pieces of equipment cleared from deck
- Three main Uranium processing buildings demolished
- U-Canyon cells ready for grouting
- Preparing for first-of-a-kind canyon demo in 2012, two years ahead of schedule



U-Canyon Ancillary Facility Demolition



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Science and Technology

Innovation and Efficiency

- Remedial Optimization (RPO) tool to increase capacity and effectiveness of groundwater remediation along the Columbia River
- New inorganic decontamination agent, Aspigel ®, being evaluated for glovebox decontamination
- LEED engineering at the 200 West Groundwater Treatment Facility
- Point of Generation waste management approach to minimize multiple handling of waste
- New treatment resin at DX expected to reduce long-term operating costs, approximately equal to cost of construction
- Super dump trucks (award-winning project) increase disposal capabilities and minimize worker handling reduces worker risks and waste disposal costs by 40 percent
- Kubota land-based survey technology providing near real-time results, limiting environmental impacts, streamlining survey and closure process
- RadBall™ radiation mapping device provides 3D image of radiation sources
 - Deploys remotely, so it provides reliable characterization data without exposure
 - Working in collaboration with Savannah River National Laboratory



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Project Delivery

- Work safely, efficiently, effectively
- Accelerate accomplishment of DOE's 2015 vision on time, and within budget
- Shrink active site cleanup footprint
- Achieve significant Central Plateau remediation
- Lifecycle mortgage reduction



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2011 Congressional Nuclear Cleanup Caucus

Hanford Cleanup Progress

Neil Brosee

President

Washington Closure Hanford



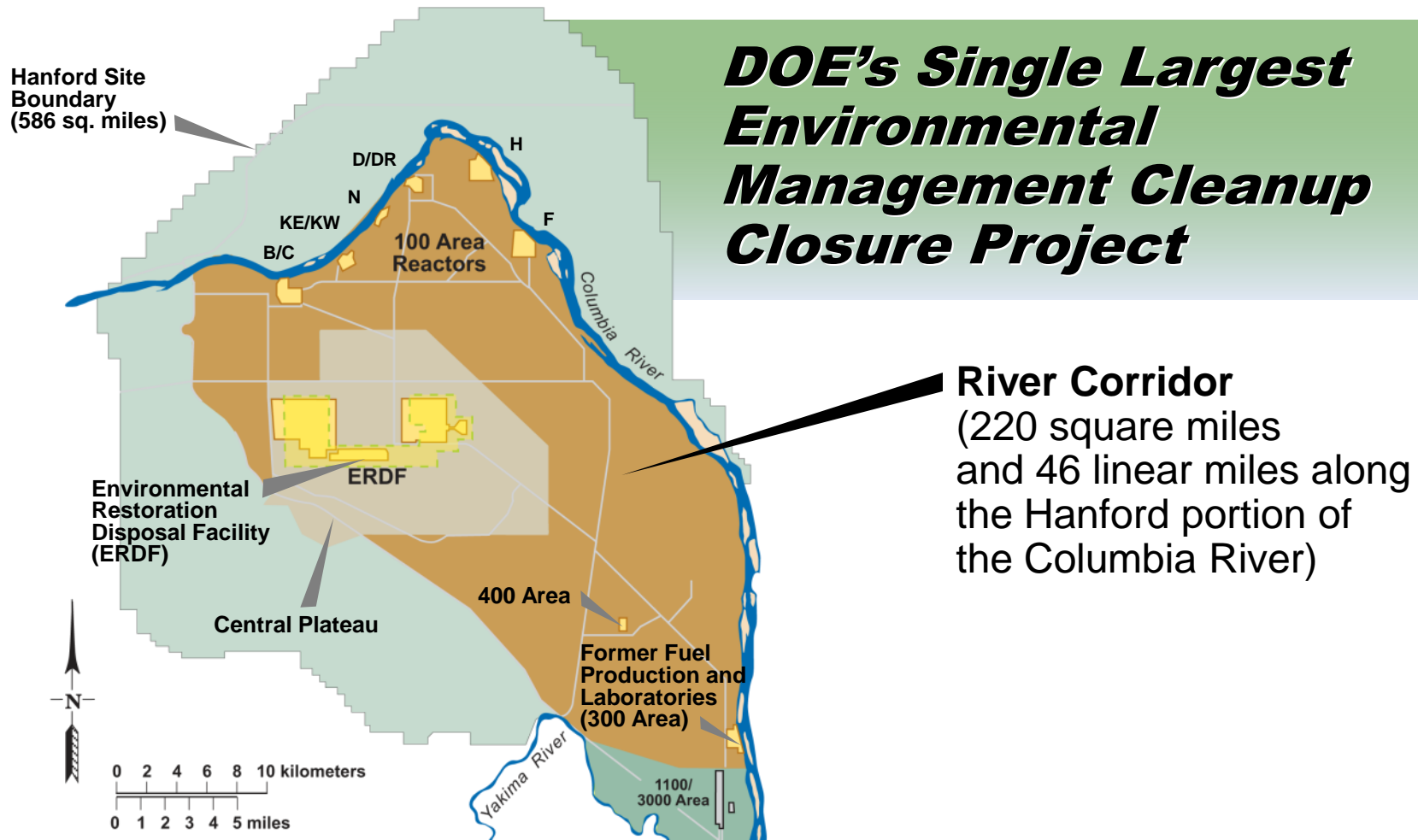
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Our work scope

DOE's Single Largest Environmental Management Cleanup Closure Project



River Corridor
(220 square miles
and 46 linear miles along
the Hanford portion of
the Columbia River)



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Our work scope

Hanford's River Corridor is home to Cold War legacy wastes from nuclear reactors and support facilities dating back to the early 1940s.

- 10-year contract ends 2015
- Cost-Plus Incentive Fee contract - Incentivizes:
 - Safe and regulatory sound cleanup
 - Cost and schedule savings
- Parent companies:
 - URS, Bechtel and CH2M Hill



Deactivate, decontaminate, decommission, and demolish 312 facilities

Clean up and close 366 burial grounds and waste sites



Treat, transport and dispose four million tons of waste debris to disposal facility



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Risks and hazards facing our workers

- Chemical and contamination hazards to the environment and worker: chromium, asbestos, beryllium, mercury, tritium
- Industrial and construction hazards
- High-dose fuel elements and other reactor parts



Pump Removal at 181N



A worker drills a hole to drain liquid from a pipe at 100-F.



A gantry crane system was used to remove hot cells from the 327 Building.



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Our safety conscious work environment

- Good safety record
- Shared safety information and lessons learned with other DOE site contractors
- Earned DOE Voluntary Protection Program Star of Excellence
- Recognized in the 2011 National Voluntary Protection Program Participants' Association (VPPPA) Best Practices Directory



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Applying technologies to improve worker safety while increasing efficiency

- Over five years, deployed 36 technologies provided from the public sector and other government sites that met technology needs
 - Increased worker efficiency
 - Reduced risks to workers
 - Reduced overall costs



Rail cart equipped with Global Positioning Environmental Radiological Surveyor (GPERS) allows workers to safely and efficiently determine radiological status of abandoned railroad rails

Remote shearing attachments for the Brokk excavator allowed workers to dismantle contaminated ductwork in Hanford's 327 Building from the safety of a remote location



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Our project remains ahead of schedule and under budget

- 10-year project is at the half-way mark and 60% complete
- Reinvested savings from efficiencies and work improvements back into the project
- To date completed 28 of 28 regulatory agreement milestones on or ahead of schedule

As of January 2011



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Our cleanup momentum continues

- Decontaminated, demolished and loaded out 155 buildings (out of 312 total)
- Remediated 177 waste sites (out of 366 total)
- Transported and disposed of 4.7 million tons of waste (including other Hanford contractors) at the Environmental Restoration Disposal Facility



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American Recovery and Reinvestment Act of 2009 (ARRA) Produces Results

Projects

- **Environmental Restoration Disposal Facility:** Enabling increased disposal rates for accelerated Hanford cleanup.
- **618-10 Burial Ground:** Completed characterization of 94 highly contaminated vertical pipe units and 12 trenches. Remediation begins in spring.
- **100-F:** Remediating 19 waste sites in F Area, one of Hanford's nine production reactor sites.

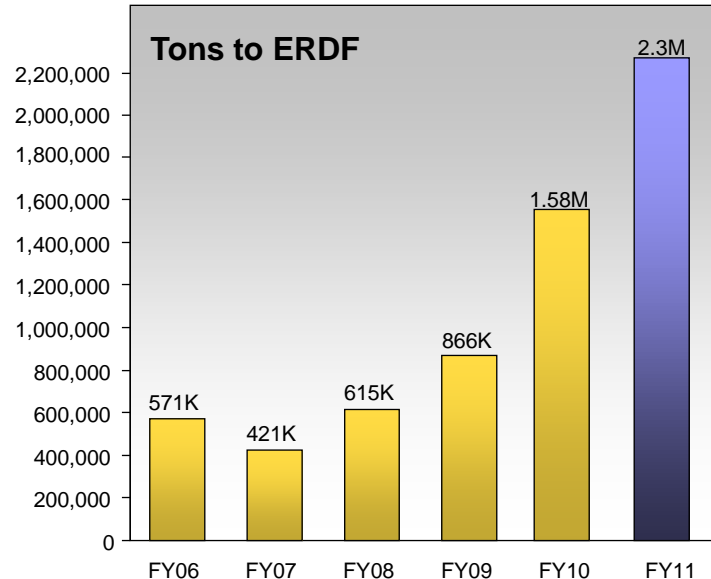
Performance

- **111 jobs**
- **\$140.3M spent***
- **365,552 safe hours***

*Data through January 23, 2011



Environmental Restoration Disposal Facility expansion ahead of schedule



618-10 Burial Ground characterization complete

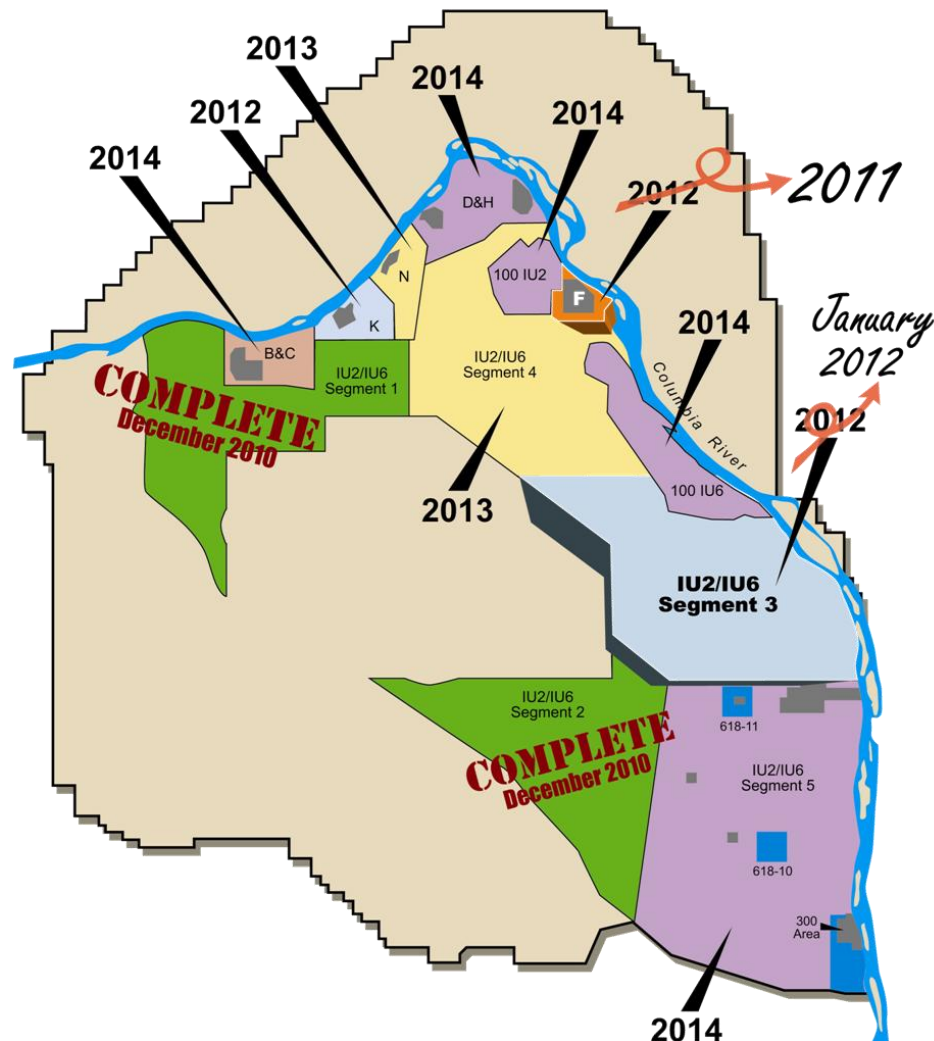
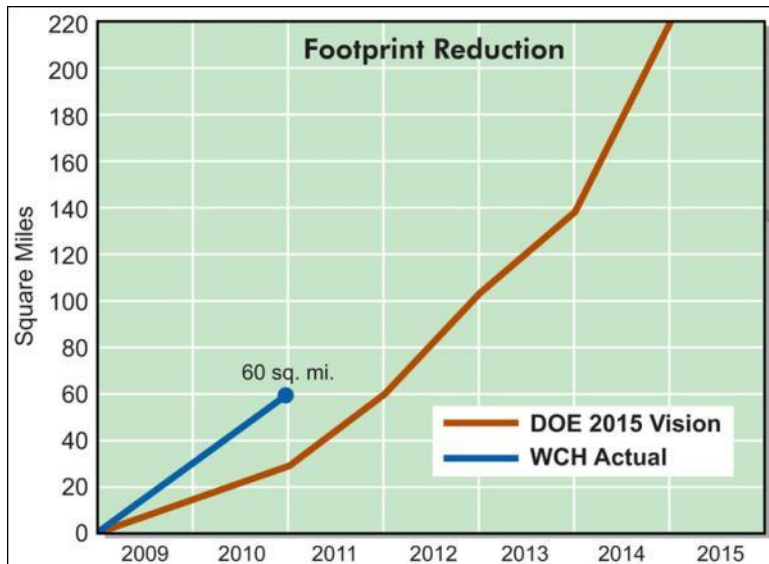


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On Track to Meet DOE's 2015 Vision



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Our Mission

- Protect our workers and the community
- Protect the Columbia River
- Complete the River Corridor cleanup by 2015 and reduce the Hanford Site footprint



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2011 Congressional Nuclear Cleanup Caucus

Hanford Cleanup Progress

Frank Armijo

President and General Manager
Mission Support Alliance



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MSA Work Scope

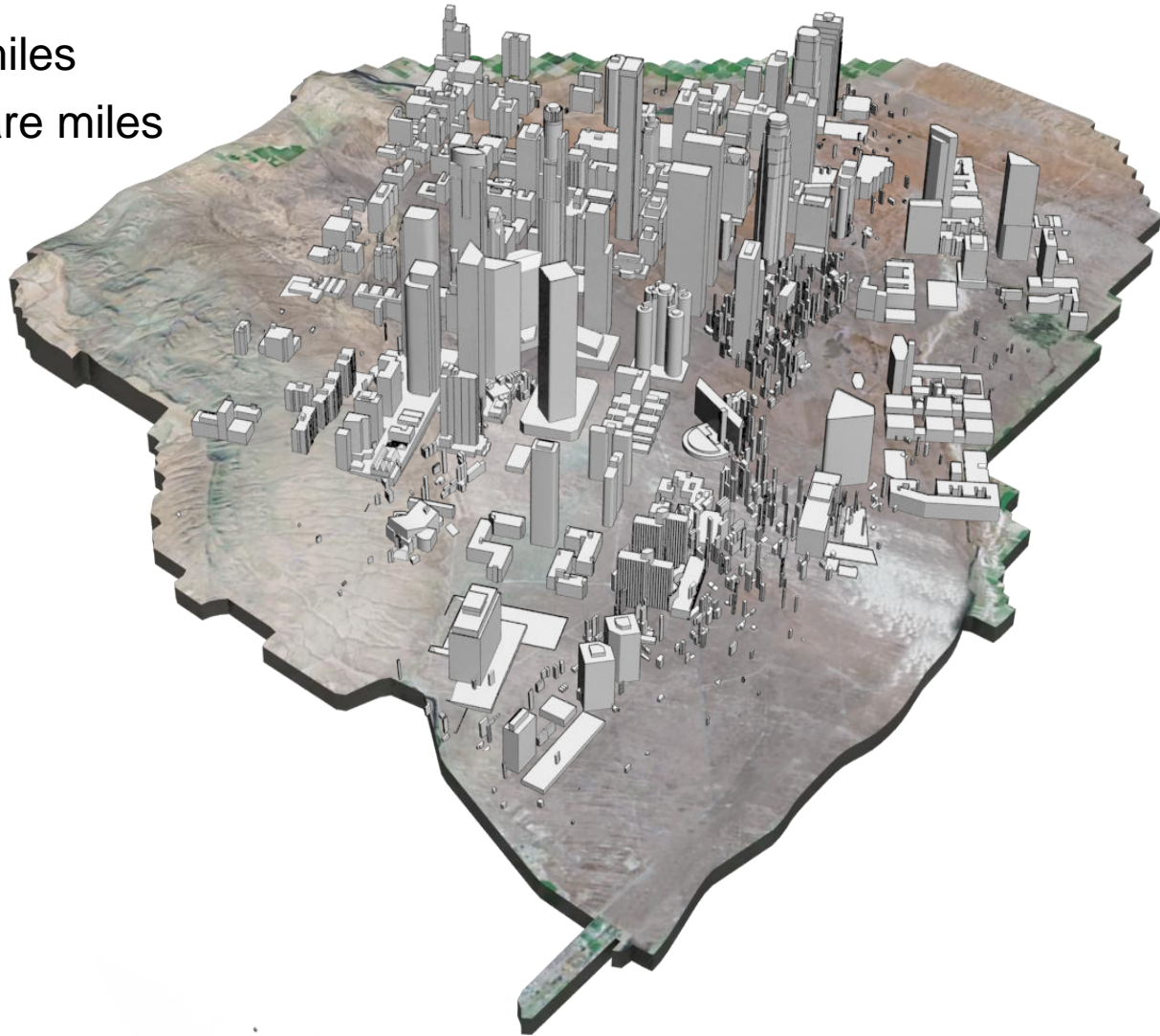
- Single integrated infrastructure and service provider for DOE-RL and DOE-ORP
 - Allow cleanup contractors to focus on their core mission
 - Right-size services and modernize Hanford's infrastructure
 - Drive innovation and cost savings
- Portfolio/Integration Management
 - Serve and coordinate needs of other Hanford contractors
 - Site-wide Safety Standards
 - Site-wide Beryllium Support
 - Integrated Lifecycle Planning
 - First ever Hanford Cleanup Integrated Lifecycle Report
 - First-of-a-kind Visualization Center



Infrastructure Scale

Hanford: **586** square miles

Los Angeles: **498** square miles



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Infrastructure Scale

SITE INFRASTRUCTURE AND UTILITIES

1 water
treatment
plant

50 septic
tanks



450,000,000
gallons of water per year

500 miles of
roadway

100 miles of
water lines



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Infrastructure Scale



SITE INFRASTRUCTURE
AND UTILITIES

LOGISTICS AND
TRANSPORTATION

2,400,000 managed facility
square feet

16,000
freight items
per month

375,000
acres of federally
owned land

24 construction
cranes

1,450 fleet
vehicles



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Infrastructure Scale



SITE INFRASTRUCTURE
AND UTILITIES



LOGISTICS AND
TRANSPORTATION

INFORMATION
MANAGEMENT

359 square miles
wifi coverage

12,000
phone lines

990,000
managed e-records



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Infrastructure Scale



SITE INFRASTRUCTURE
AND UTILITIES



LOGISTICS AND
TRANSPORTATION



INFORMATION
MANAGEMENT

ENVIRONMENTAL
INTEGRATION SERVICES

144 cultural /
historic reviews



70,000
chemical analyses

55%
increase
laboratory
samples

29 Tri Party Agreement
change packages



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Infrastructure Scale



SITE INFRASTRUCTURE
AND UTILITIES



LOGISTICS AND
TRANSPORTATION



INFORMATION
MANAGEMENT



ENVIRONMENTAL
INTEGRATION SERVICES

EMERGENCY SERVICES
AND TRAINING

1,500
emergency
response
calls

63,000
student training
days

32 wildfires
last year

28 emergency
response
vehicles



24/7 maintain patrol
operations center

4 fire
stations



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Infrastructure Scale



SITE INFRASTRUCTURE
AND UTILITIES



LOGISTICS AND
TRANSPORTATION



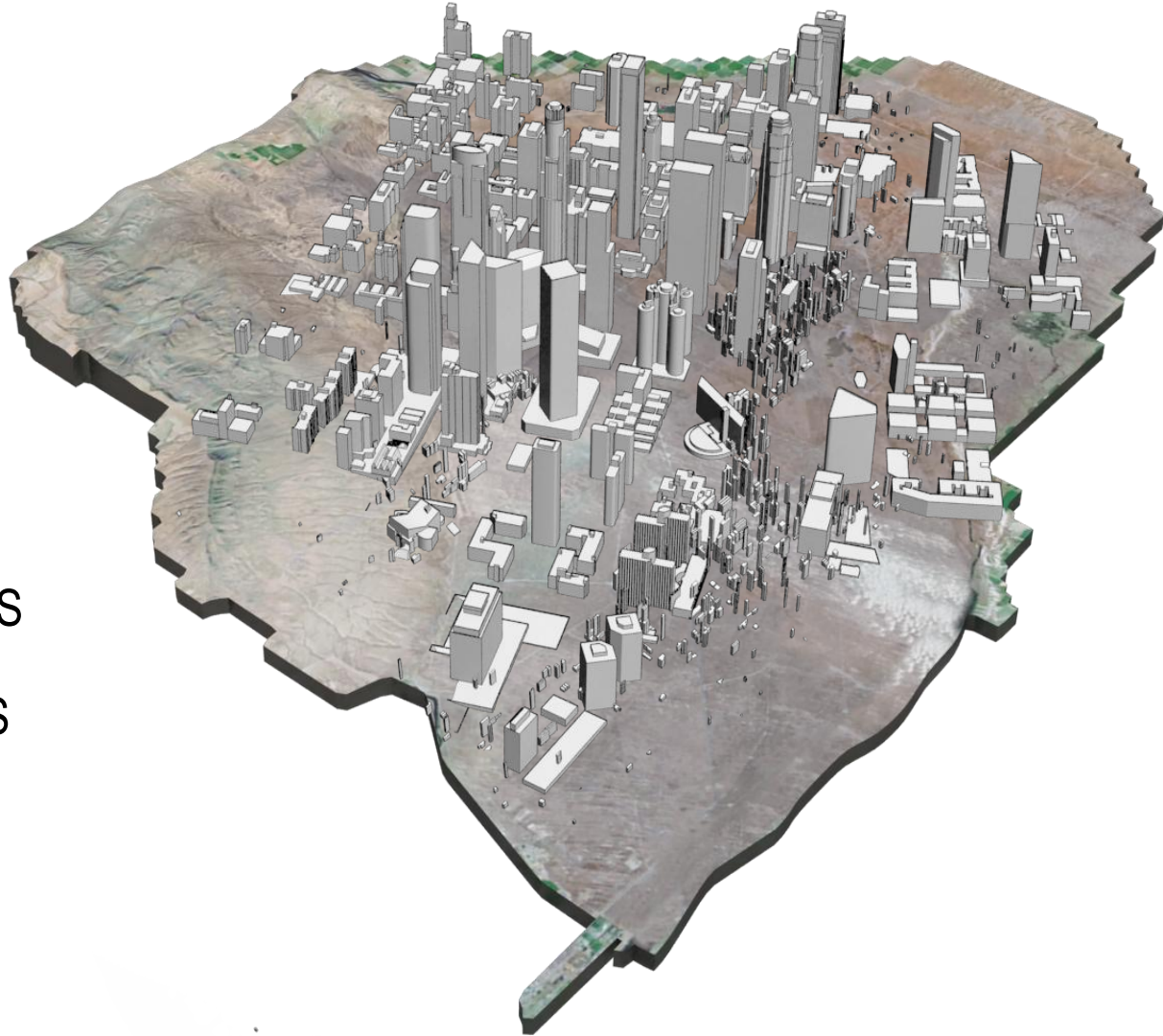
INFORMATION
MANAGEMENT



ENVIRONMENTAL
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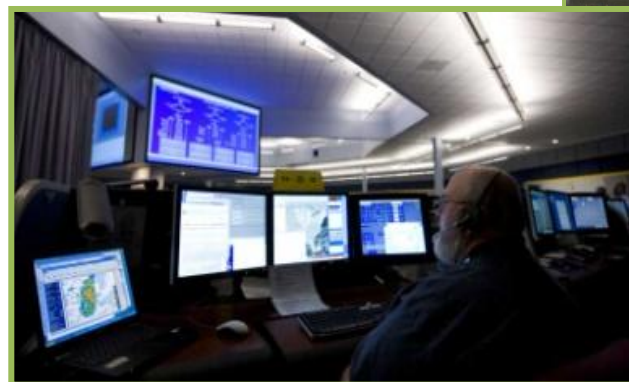
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Safe and Secure Operations

- Achieved Integrated Safety Management System verification Phase I and II
- Developed 14 site-wide safety standards
- Established a site-wide Beryllium advisory team with subject matter experts
- Maintained nationally recognized elite protective forces
- Received highest cyber security ratings
- Training for cleanup workers



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Progress to Date

- Successful support for Recovery Act funding
 - 25% increase in service requests
- Implemented commercial Service Delivery Model
 - Service level agreements and performance metrics
- Improved services and reduced costs through Lean Six Sigma
 - Crane and Rigging
 - Fleet Services
 - Waste Sampling
 - Field Services
- Over \$160M awarded to small business



Progress to Date

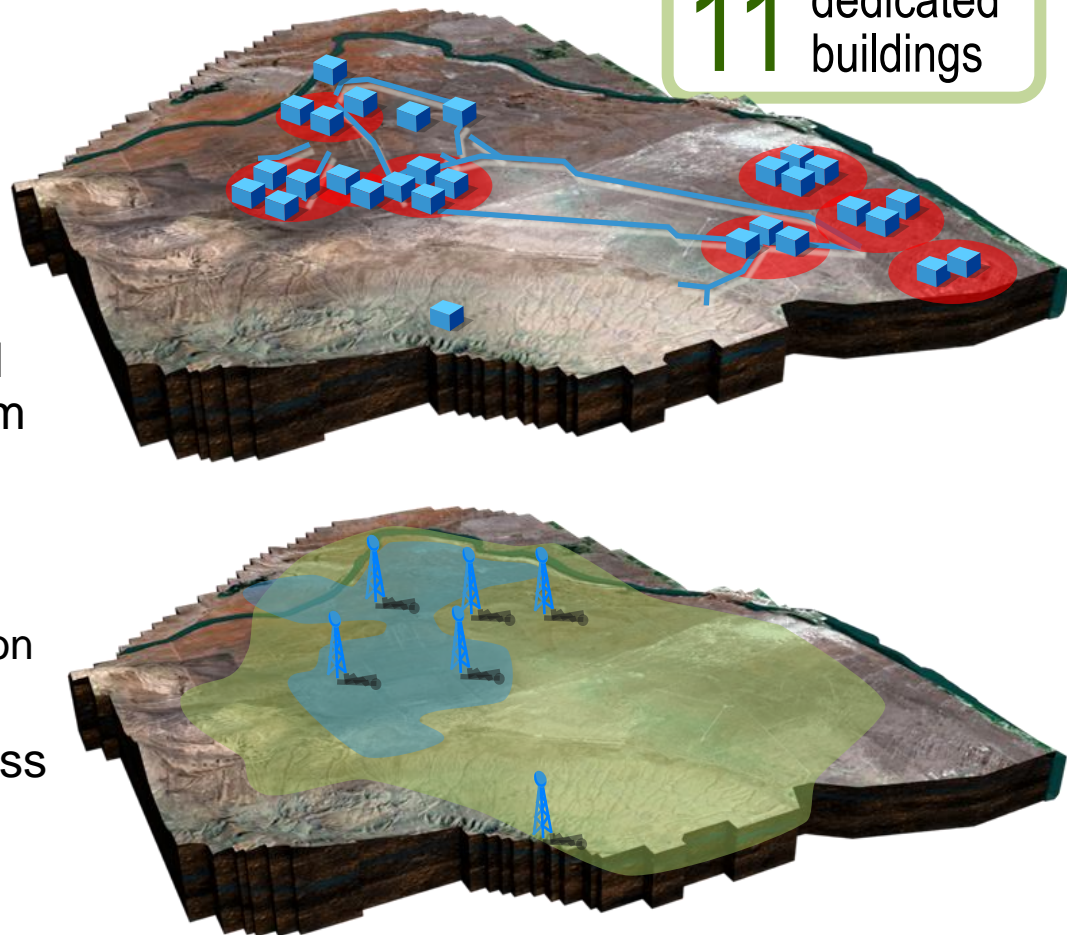
- Partnering with other Hanford contractors to address specific operations needs
 - Supported WRPS' project to construct and install the Mobile Arm Retrieval System in single-shell tank C-107
 - Rerouted the 100B export water line to support WCH soil remediation projects
 - Supported PFP D&D by resolving breathing air hoses quality issue
 - Analytical Services supported 200W Powerhouse Stack Demolition
- Improved Waste Sampling and Characterization Facility improvements
 - Partnered with HAMTC to improve processes comparable to commercial lab production



Progress to Date

- Implemented new strategies for Protective Forces
 - Completed construction of a new Interim Storage Area that allowed CHPRC to expedite PFP D&D
- Partnering with WCH and preparing for transfer of initial land segments into Long-Term Stewardship
- Initiated consolidation of IT infrastructure
 - 62% facility footprint reduction
 - 55% power reduction
- Accelerated information access
 - Expanded wireless by 400%

11 dedicated buildings



Actual WiMAX Coverage (359 sq. miles)



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Infrastructure Trends



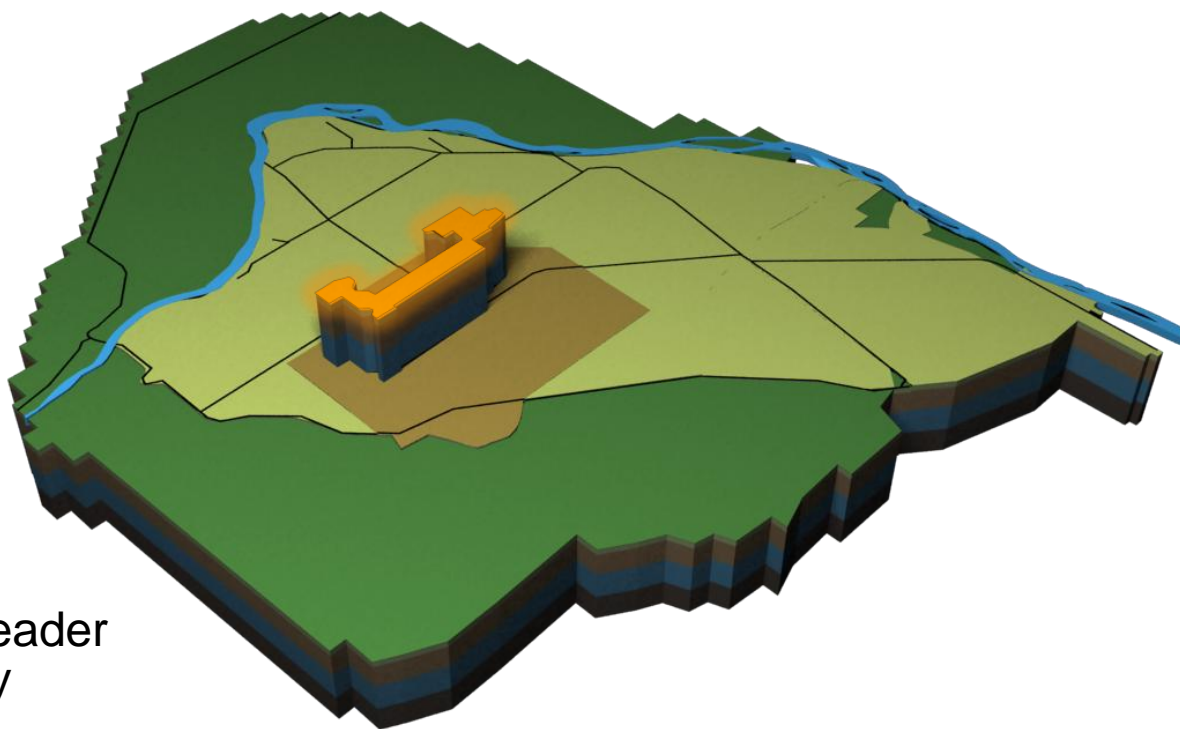
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Preparing for the Future

- Implement Commercial Service Delivery Model
- Drive Efficiencies and Cost Saving
- Right Size the Infrastructure
- Support WTP and Waste Complex Operations
- Lead Site-Wide Integration
- Make Hanford a National Leader in Clean Energy Technology



Partnering to move the mission forward



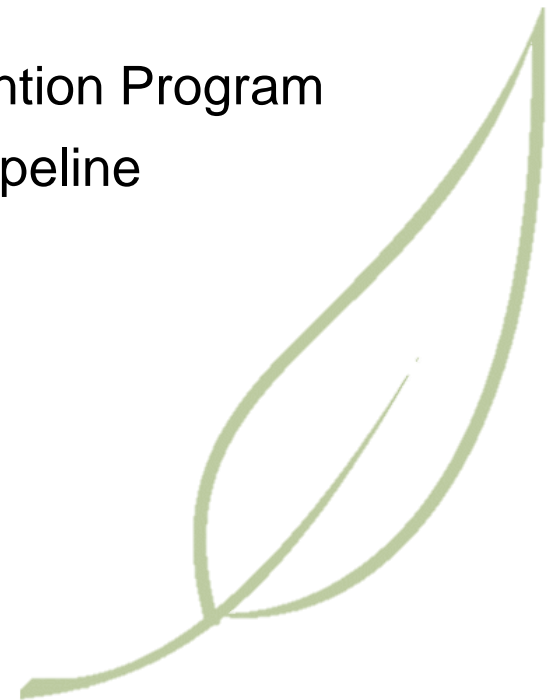
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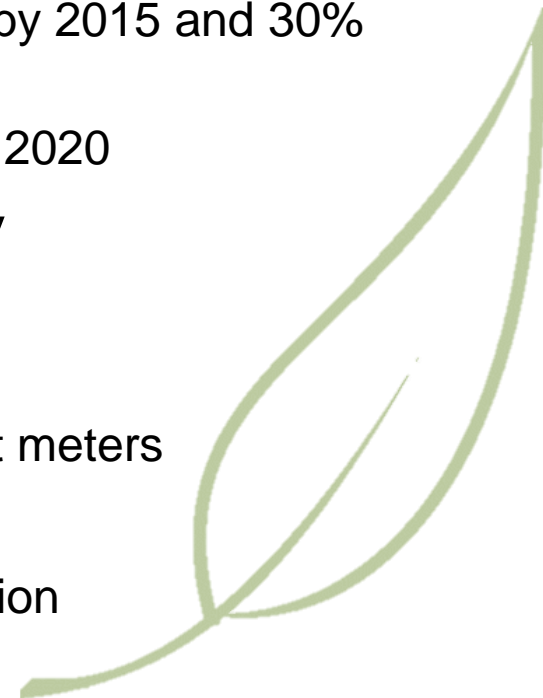
Clean Energy Progress to Date

- Received "Best in Class" E Star award from DOE EM for environmental stewardship projects
- Infrastructure footprint reduction
 - Replacing desktop computers with Thin Client terminals
 - Reducing energy consumption by 95%
- Reduced MSA CO2 emissions by 36%
- Accelerated Waste Minimization/Pollution Prevention Program
- Received approval to implement a natural gas pipeline



Clean Energy Focus – The Future

- Reduce energy usage (intensity) 30% by 2015
 - Explore renewable energy projects
 - Complete Green in Three IT projects
 - Reduce power consumption by 1M kWh/year
- Reduce Hanford emissions by 28% by 2020
 - Increase number of alternative fuel vehicles 15% by 2015 and 30% by 2020
 - Reduce site fuel usage 25% by 2015 and 50% by 2020
- Implement employee commuting feasibility study recommendations
- Implement test bed for new “green” technologies
 - Implement an energy utilization system with smart meters
 - Grid and infrastructure alternatives
 - Develop commercial concepts and expand utilization



Questions and Answers

Matt McCormick

Manager, Richland Operations Office

Neil Brosee

President, Washington Closure Hanford

John Lehew

President and CEO, CH2M Hill

Frank Armijo

President and General Manager, MSA



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